

# TREES and STORMWATER



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**‘ YOU CAN’T GET TO WHERE YOU ARE  
GOING,  
UNLESS YOU ARE WILLING  
TO LEAVE WHERE YOU  
ARE AT ’**





# URBAN SPRAWL

CUT DOWN ALL THE TREES AND  
NAME THE STREETS AFTER THEM

© 2001

Northern Sun Merchandising

Minneapolis MN 55408

800-258-8579

8579



# OUTLINE:

1. Overview Grey vs. Green (TREES)
2. Planting Sites/Design
3. Riparian Areas
4. Preservation
5. CU Soils
6. PEGSMOR/Diversity



# GOALS OF URBAN WATERSHED FORESTRY

- PROTECT
  - Priority forests
  - Existing Canopy
  - Preservation during Development
- ENHANCE
  - Forest Buffers and Fragments
- REFOREST
  - Planting Trees during Development
  - Reforest Private and Public Lands





## Downtown Minneapolis

Minneapolis, MN, October 11, 2004 (dc035647)

[Image Bank Home](#)  
[Design Center Home](#)





Near Country Club Plaza  
Kansas City, MO, October 28, 2005 (dc40282)

[Image Bank Home](#)  
[Design Center Home](#)





Brookdale Shopping Center  
Brooklyn Center, MN, May 1999 (dc005458)

[Image Bank Home](#)  
[Design Center Home](#)





Office park parking lots near Prairie Center Drive and I-94

Eden Prairie, MN, July 26, 2004 (dc033857)

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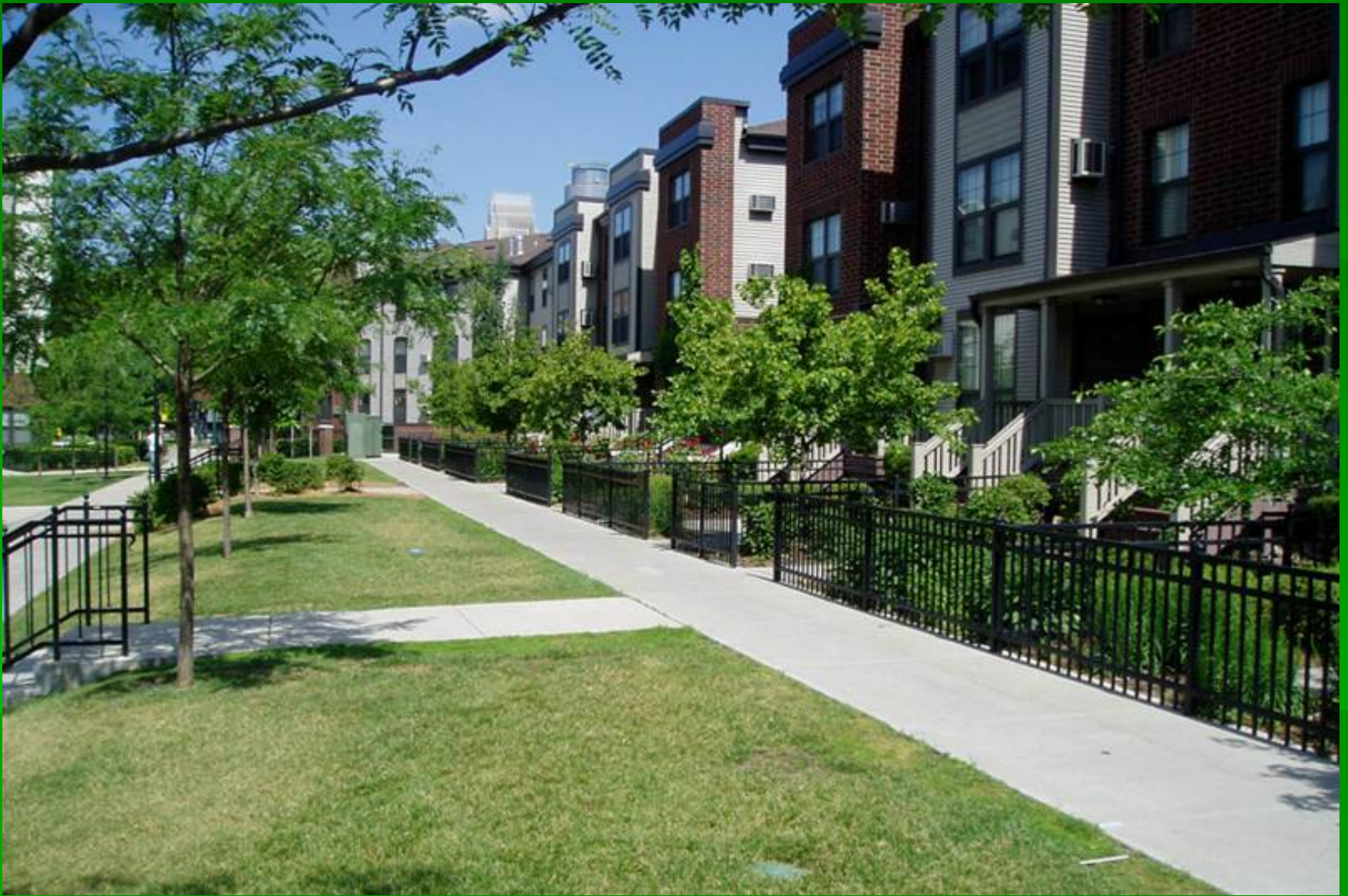




New development along woods  
Bloomington, MN, May 19, 2004 (dc023672)

[Image Bank Home](#)  
[Design Center Home](#)





East Village

Minneapolis, MN, June 24, 2005 (dc037064)

[Image Bank Home](#)  
[Design Center Home](#)





# GREEN INFRASTRUCTURE

Often, is not treated  
the same as gray







# TREES ARE BAD....

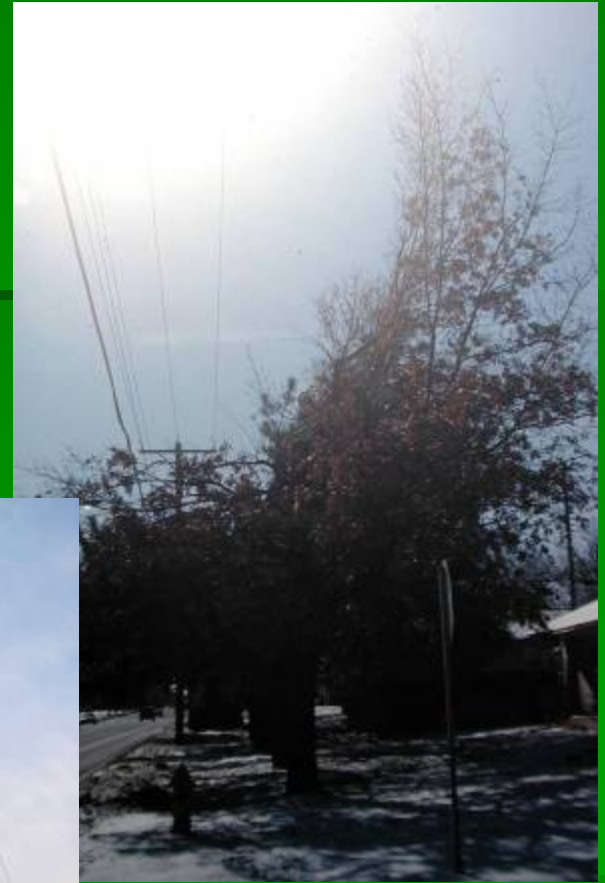
- Destroy grey infrastructure
- Block signage
- Block line of sight for traffic
- Allergies
- Increase crime
- Utility conflicts
- Messy







# UTILITY CONFLICTS





# BENEFITS OF URBAN FOREST COVER:

- Sequester of gaseous air pollutants and particulates.
- Conserve energy through transpirational cooling, shade, and wind reduction
- Reduce temps of water and impervious surfaces
- Reduce storm water run-off
- Improve water and soil quality
- Reduce erosion
- Reduce noise
- Provide wildlife/aquatic habitat
- Increase property value
- Improve aesthetics, and
- Psychological well being



# RIPARIAN AREAS









# PLANTS.....

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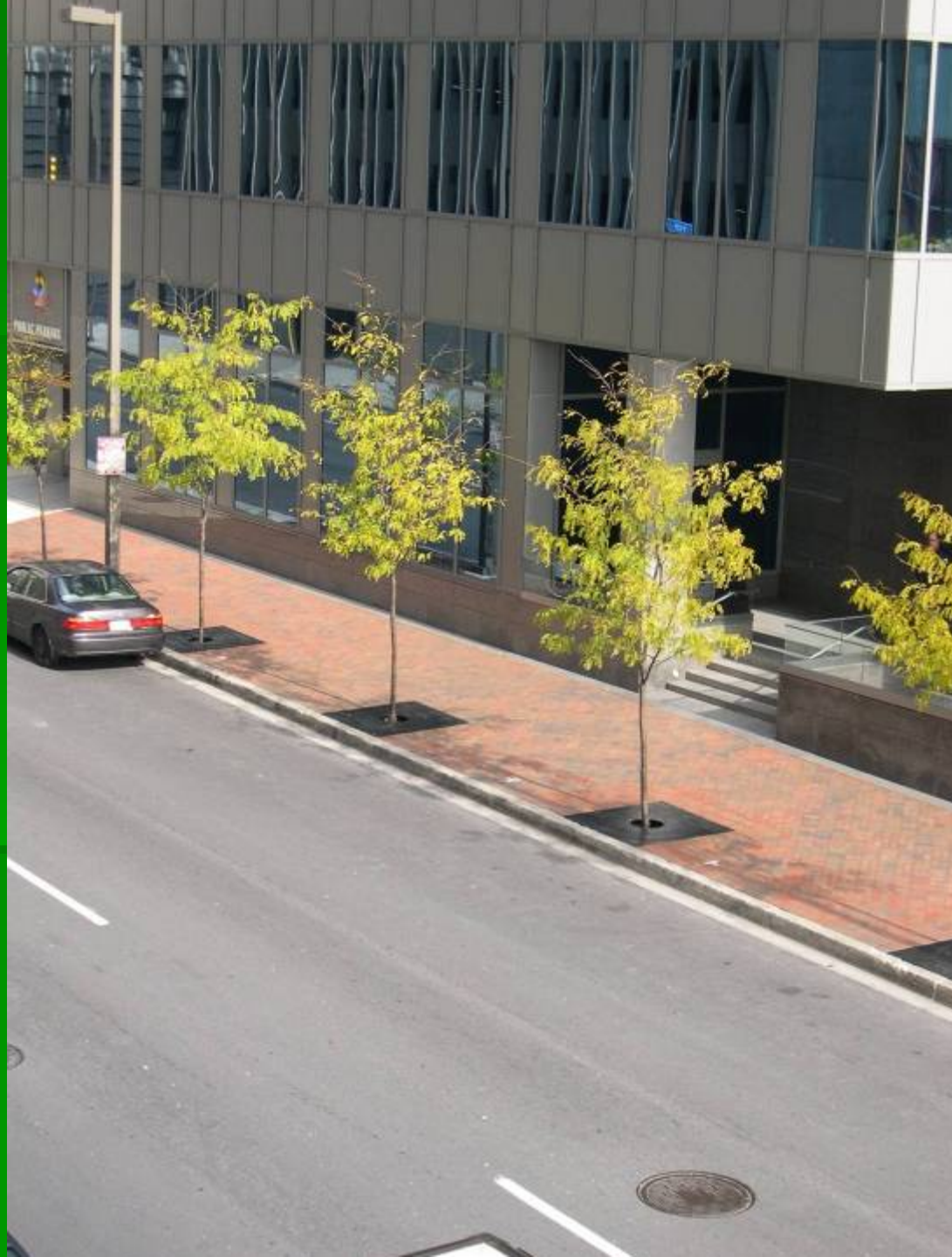




# PLANTING HOLE













**MILANO** ITALIAN  
DINING











# MEDIANS





COMPLETE LEFT  
TURN AFTER  
TRAFFIC CLARITY













**'CUT-OUTS'**





# PARKING SPACE

# ENVIRONMENTALLY FRIENDLY











**Lenexa's 'Rain to  
Recreation'**













**HUTCHINSON**

# CON AGRA OMAHA, NE







**WICHITA**







# TREE PLACEMENT

- IS IT A PLANTABLE SPACE?
  - ADEQUATE ROOTING AREA
  - OUTGROW SITE
- HEIGHT AND WIDTH REQUIREMENTS
- UTILITY CONFLICTS
- LENDS ITSELF TO PRUNING
  - 8' CLEARANCE SIDEWALKS
  - 13' CLEARANCE STREETS

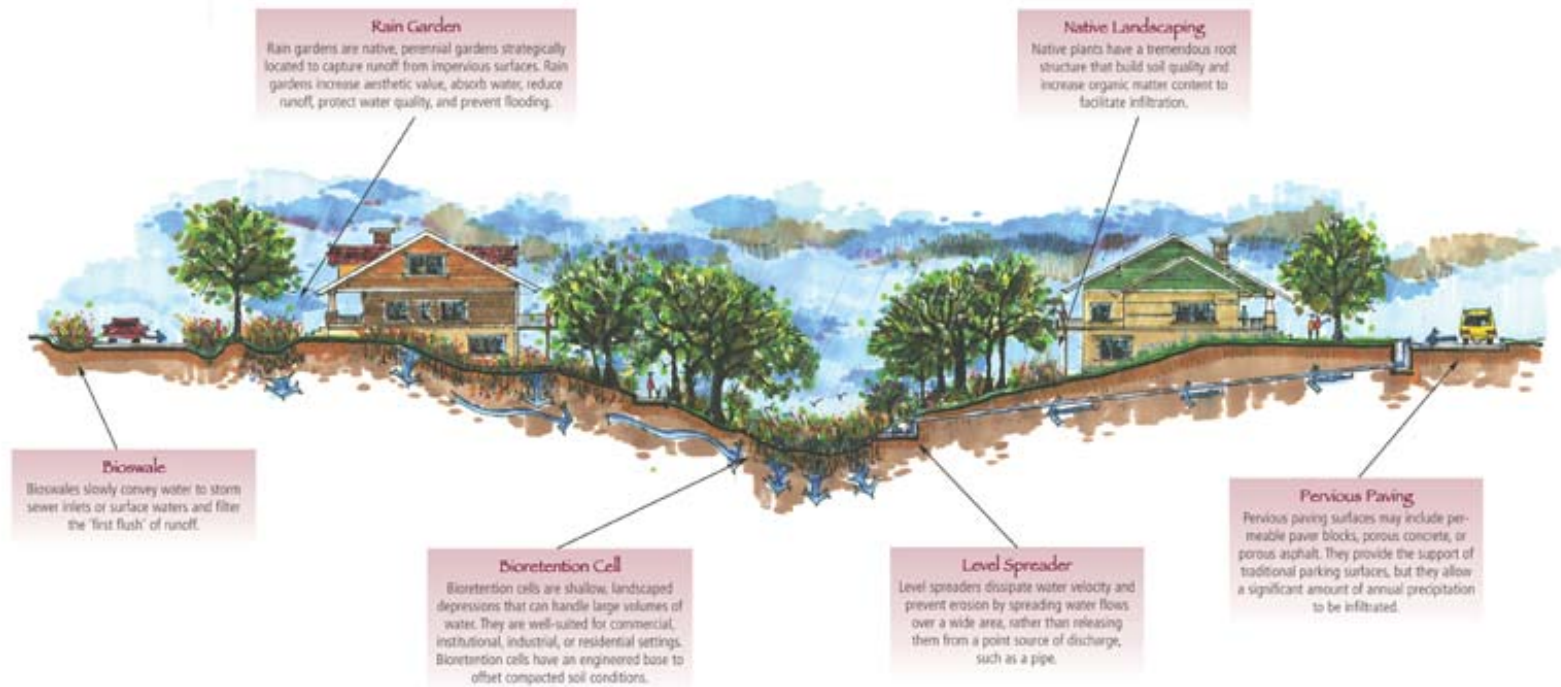






# LOW IMPACT DESIGN

## The LID approach to storm water management







# PRESERVATION









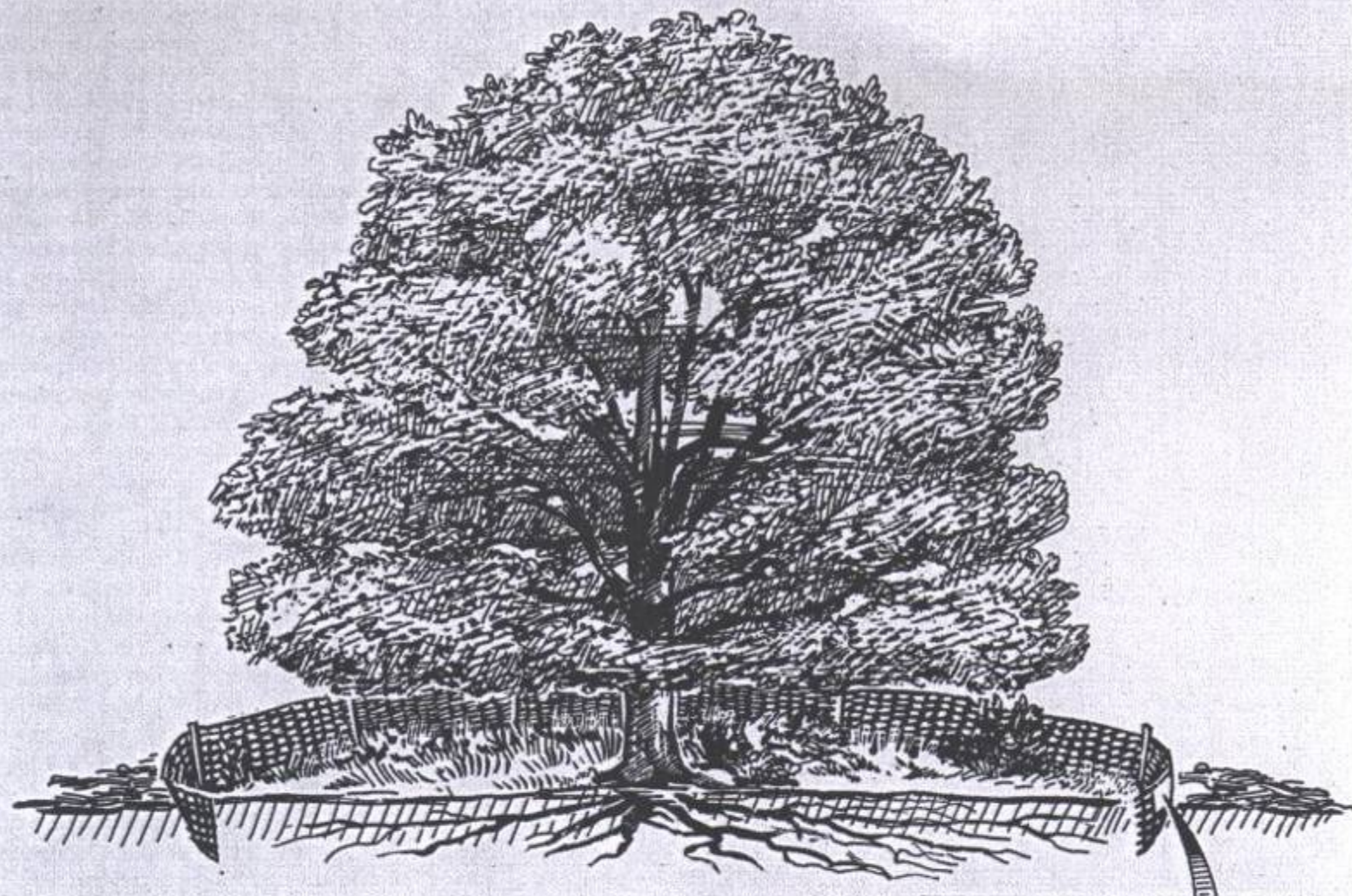


Figure 10. A Tree Protection Zone (TPZ) must be large enough to protect the soil from compaction and the tree from limb and root damage, and it must be explained by a sign.

WARNING  
THIS FENCE SHALL NOT BE  
RELOCATED OR REMOVED WITHOUT  
WRITTEN AUTHORIZATION FROM  
THE DEPARTMENT OF PLANNING  
AND COMMUNITY DEVELOPMENT.  
ORDINANCE 937-NS  
RESO. NO. 87-93



# STRUCTURAL SOILS

- 80% ANGULAR CRUSHED GRAVEL
- 20% CLAY
- HYDROGEL

Trademarked as the CU soil

DR. NINA BASSUK,  
CORNELL UNIVERSITY

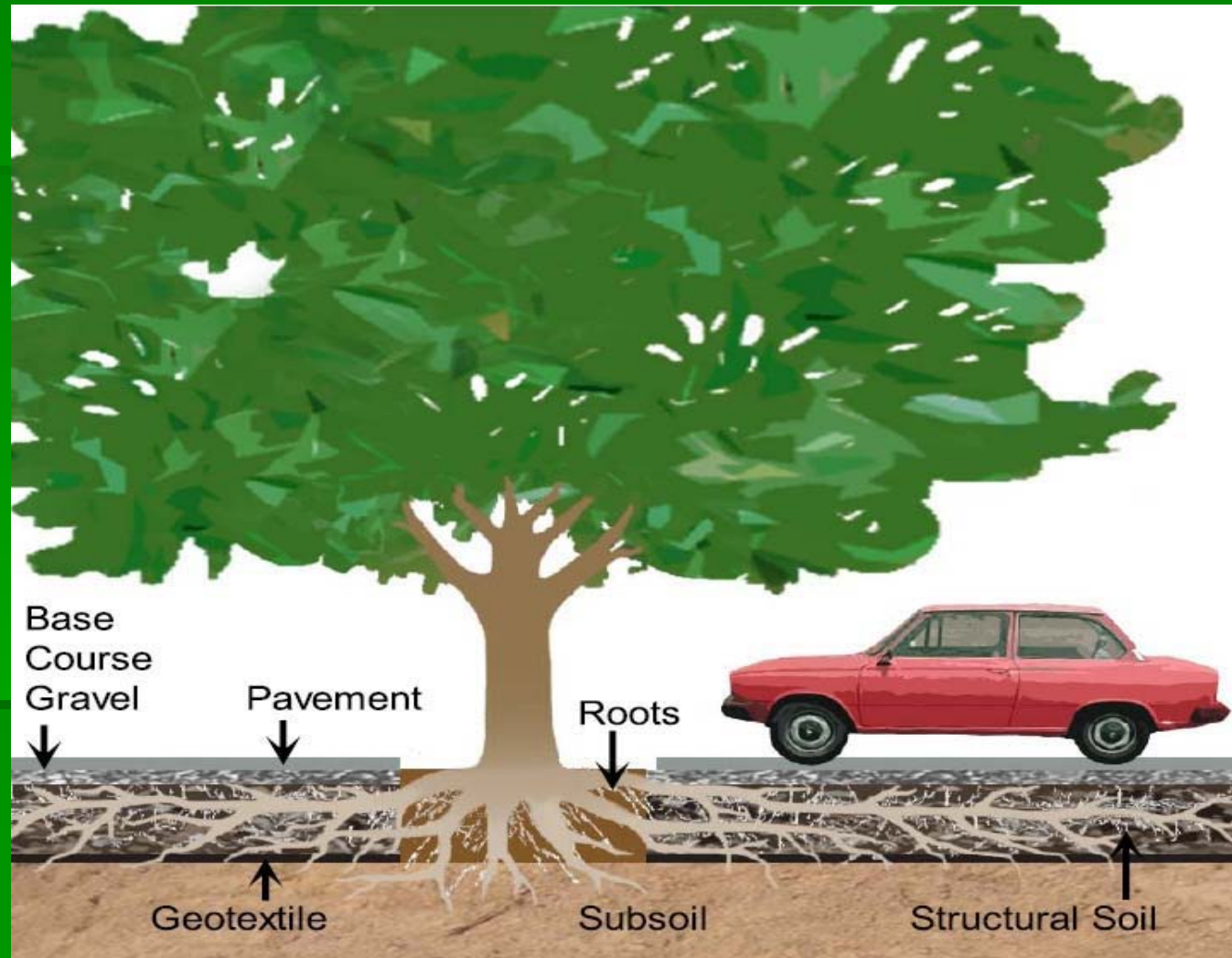
# CU SOIL

- • Support the weight of pavement, cars and other structures
- • Provide space for tree roots to flourish under paved sites
- • Porosity of 30–35%, and
- infiltration rates (514 cm/hour!)





- Water enters the structural soil reservoir through pavement swales and tree pits (or through porous pavement)









# TREE SELECTION AND DIVERSITY

(SELECT FOR THE URBAN ENVIRONMENT)

- Drought or moisture tolerant
- Mature size fits' Rooting Area'
- Slower growing??
- Preferred Species
- Healthy, to begin with
- Free from disease and insects
- Good branch structure
- Rootball intact



**NEW ELMS**

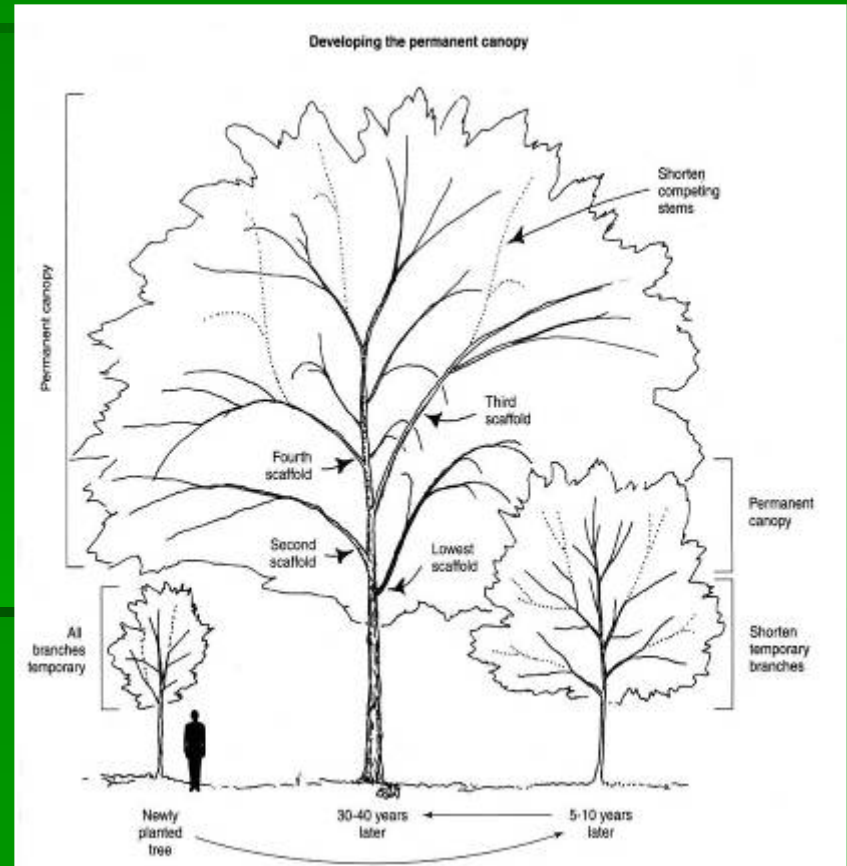




# PEGSMOR

City of Denver

- Plant
- Establishment
- Growth
- Structure
- Mature
- Over-Mature
- Replace







**OVER-MATURE**

**REPLANT**



